

REMARKS

Upon entry of this amendment, claims 23-42 will be pending. Claims 23-31, 33-37, and 39-42 have been amended. Claims 1-22 have been canceled. Claim 43 has been added. No new matter is being introduced by the current amendments.

Rejections Under 35 U.S.C. §103

Mickanickl et al. and Akhtar et al.

Applicant respectfully requests reconsideration of the rejection of claims 23, 24, 27-39, 41 and 42 as being unpatentable under 35 U.S.C. §103(a) over U.S. Patent 5,804,035 (Mickanickl et al.) in view of WIPO publication WO 03/040462 (Akhtar et al.).

Applicant's independent claims have the following express requirements which are especially relevant to this analysis:

- (a) the starting material is a board material of adhesively bonded lignocellulosic elements;
- (b) electromagnetic radiation is used to swell the material; and
- (c) recovering a lignocellulosic element.

Mickanickl et al. disclose methods for the recovery of wood fibers from timber-derived materials by swelling the materials with an impregnating solution, heating the impregnated materials, and then separating the disintegrated materials. Nowhere do Mickanickl et al. disclose utilizing electromagnetic radiation for the recovery of a lignocellulosic element from board materials as required by claims 23, 41 and 42 of the present invention. The Office has cited Akhtar et al. to compensate for this deficiency.

Akhtar et al. disclose methods for making wood pulp in a paper manufacturing process. Making wood pulp is a process for extracting fibrous material from wood. The cellulose fibers are then used in paper manufacture. Lignin is considered to be a contaminant (See, for example, paragraph 3 of Akhtar et al. "Lignin, the least desirable component in the pulp" And "...lignocellulosics that must be disrupted ... to separate lignin from the matrix of wood fibers."). So, pulping involves breaking wood down into

two separate components with the goal of recovering cellulose (e.g. cellulosic fiber) separately from lignin. The goal of pulping is to recover wood fiber, not to recover lignocellulosic material.

Akhtar et al. disclose the microwaving of wood logs as a preliminary step to conventional pulping methods. However, this application is directed toward the breakdown of lignocellulose in pulping and paper manufacture to produce stronger paper, and *not* to the recovery of lignocellulosic elements (See, for example, paragraph 39 of Akhtar et al.). The present invention is directed at separating lignocellulosic elements from the adhesive bonding them together. Therefore, one skilled in the art would not follow the teachings of Akhtar et al., a pulping method which destroys lignocellulosic elements, when considering methods for the recovery of lignocellulosic elements.

In addition, the feedstocks of Akhtar et al. and the present invention differ. Specifically, the pulping process in Akhtar et al. uses wood logs, which are highly ordered and complex, containing living material such as cellular cytoplasm, phloem, etc. On the other hand, the feedstock of the present invention is a highly homogeneous board material comprised of adhesively bonded lignocellulosic elements. Given these differences, one skilled in the art would not reference methods of pulping from wood logs when considering methods of recycling board materials as presently claimed.

Stated another way, in view of the disparate purpose of the Akhtar process -- to break down raw wood into lignin and cellulose -- from the purpose of the Mickanickl process -- to recover intact lignocellulosic elements -- it cannot reasonably be held that one skilled in the art would have any basis to combine the teachings of the respective references as proposed in the Office action. Akhtar et al. teach using microwaves to essentially destroy lignocellulosic elements; which of course is directly contrary to and defeats the purpose of the Mickanickl process.

Therefore, it is respectfully submitted that the disclosure of Akhtar et al. does not cure the deficiencies of the primary reference Mickanickl et al. and this combination of references relied on by the Office fails to establish a *prima facie* case of obviousness as to claims 23, 41 and 42. Also, it is respectfully submitted that it would not have been obvious to one of skill in the art to combine the disclosures of the references to arrive at the processes of claims 23, 41 and 42.

Accordingly it is respectfully submitted that claims 23, 41 and 42 are patentable over the disclosure of Mickanickl et al. in view of the disclosure of Akhtar et al. It is further respectfully submitted that claims 24 and 27-39 that depend directly or indirectly from claims 23, 41, and/or 42 are patentable over the combination of references for the reasons set forth above.

Mickanickl et al., Akhtar et al., and Bergstrom et al.

Applicant respectfully requests reconsideration of the rejection of claims 25, 26 and 40 as being unpatentable under 35 U.S.C. §103(a) over Michanickl et al. in view of Akhtar et al. and further in view of U.S. Patent No. 4,000,032 (Bergstrom et al.).

As noted, Mickanickl et al. disclose methods for the recovery of wood fibers from timber derived materials but without the use of electromagnetic radiation. Akhtar et al. disclose a method for making wood pulp that utilizes, as a preliminary step, microwaves to separate cellulose from lignin in raw wood. Nowhere do Mickanickl et al. or Akhtar et al. disclose utilizing radio waves for the recovery of a lignocellulosic element from board materials as stated by claims 25, 26 and 40 of the present invention. The Office has cited Bergstrom et al. to compensate for this deficiency.

Bergstrom et al. disclose a method for freeing cellulose fibers from lignocellulosic materials, particularly raw wood, via radio or microwaves within a conventional pulping process (See, for example, col. 6, lines 24-35 of Bergstrom et al.). Similar to Akhtar et al., the goal of this method is not to recover lignocellulosic material, but to break wood down into two separate components with the goal of recovering cellulose (e.g. cellulosic fiber) separately from lignin. As previously stated, the present invention is limited to the recovery of the lignocellulosic element from board materials comprised of a matrix adhesively bonded lignocellulosic elements. Bergstrom et al. fail to disclose a process for the recovery of lignocellulosic elements from a feedstock of board materials comprised of a matrix adhesively bonded lignocellulosic elements. Therefore, one skilled in the art would not be motivated to reference Bergstrom et al. when considering methods for the recovery of lignocellulosic elements from board materials.

Accordingly, it is respectfully submitted that Bergstrom et al. does not cure the deficiencies of Mickanickl et al. and Akhtar et al. and this combination references relied

on by the Office fails to establish a *prima facie* case of obviousness as to claims 25, 26, and 40 as applied to claims 23, 24, 27-39, 41 and 42. Furthermore, neither Akhtar et al. nor Bergstrom include disclosures which would provide the basis for one skilled in the art to modify the disclosures to arrive at the claimed methods for the recovery of lignocellulosic elements from board materials.

Accordingly, it is respectfully submitted that claims 25, 26, and 40 are not obvious in view of the disclosure of Michanickl et al. in view of Akhtar et al. as applied to claims 23, 24, 27-39, 41 and 42 and further in view of Bergstrom et al.

CONCLUSION

In view of the above, favorable reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,

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